Review Article

CONGENITAL SYPHILIS: LITERATURE REVIEW

Sífilis Congênita: uma revisão da literatura

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RESUMO

A sífilis é uma doença infectocontagiosa causada pela pelo *Treponema pallidum* e apresenta altas taxas de transmissão vertical, podendo chegar a 100% dependendo da doença materna e da fase da gestação. O diagnóstico da sífilis gestacional é simples e o seu rastreamento é obrigatório durante o pré-natal. Ainda assim, essa patologia apresenta elevada prevalência, afetando dois milhões de gestantes no mundo. Os procedimentos prestados em recém-nascidos com sífilis congênita representam custos três vezes superior aos cuidados dispendidos a um bebê sem essa infecção. O tratamento é, no geral, realizado com penicilina e deve estender-se aos parceiros sexuais. Não tratar, ou tratar inadequadamente, a sífilis congênita pode resultar em abortamento, prematuridade, complicações agudas e outras sequelas fetais.

DESCRITORES: Sífilis congênita. *Treponema pallidum*. Transmissão vertical.

ABSTRACT

Syphilis is an infectious disease caused by *Treponema pallidum* and has high rates of vertical transmission, which can reach 100% depending on the maternal disease and stage of pregnancy. The diagnosis of gestational syphilis is simple and its screening is required during the prenatal period. However, this disease still has a high prevalence, affecting two million pregnant women worldwide. The procedures performed in newborns with congenital syphilis represent costs that are three-fold higher than the ones spent on a baby without this infection. The treatment is generally carried out with penicillin and must be extended to sexual partners. Inadequate or lack of treatment of congenital syphilis can result in miscarriage, premature birth, acute complications and other fetal sequelae.

KEYWORDS: Congenital syphilis. *Treponema pallidum.* Vertical transmission.

INTRODUCTION

The incidence of congenital syphilis is an important indicator of the quality of maternal-child care and it is estimated that 12,000 newborns in Brazil have the disease each year.[1] Syphilis is caused by *Treponema pallidum* infection and has high rates of vertical transmission, reaching 100% at the first two phases of maternal disease. The Brazilian prevalence is 1.6% among pregnant women; however, it is estimated that an underreporting of up to 67% of cases can occur, even with the use of the Brazilian National Notifiable Diseases Surveillance System.[2,3] Congenital syphilis prevention is carried out only in the prenatal period and cannot be performedduring delivery or in the postnatal period, a fact that emphasizes the direct association between the frequency of the disease and the quality of primary and women's health care.[4] The diagnosis of gestational syphilis is simple and all pregnant women should be screened forthe disease. The treatment is generally performed with penicillin and should be extended to the mother's sexual partners. Inadequate or lack of treatment of congenital syphilis can result in miscarriage, premature birth, acute complications and other fetal sequelae.[3]

EPIDEMIOLOGY

In Brazil, the incidence in the year 2011 reached 3.3 cases per 1,000 live births, and the northeastern and southeastern regions showed higher rates when compared to other regions[5]. Moreover, there is a large number of unreported cases, whereas perinatal mortality rates due to syphilis aredisplayedonly in the states of Espirito Santo, Rio de Janeiro, Sao Paulo, Parana, Santa Catarina, Rio Grande do Sul and Mato Grosso do Sul, according to the Basic Health Indicators (IDB, 2008) of the Interagency Network for Health Information (RIPSA).[6] Most neonates with congenital syphilis are preterm and have low birth weight, thus requiring longer periods in the intensive careunits. The procedures performed in newborns with syphilis represent coststhat are three-foldhigher than theresources spent on a child without thedisease.[6]

TRANSMISSION

Congenital Syphilis is a disease caused by *Treponema pallidum*, which is disseminated through the bloodstream, infecting the fetus through the placenta,when the infected pregnant woman isuntreated or receives inadequate treatment. Such transmission is possible at any stage of pregnancy, being more likely to occur in the first or second phases of the disease, reaching 100% of vertical transmission probability. There is also the chance of contamination of *T. pallidum* directly to the fetus during passage through the birth canal, as there are genital lesions during pregnancy. Transmission is also possible during breastfeeding, as long as breast lesions are present.[7] Approximately a third of pregnant women infected with *T. pallidum* can progressto fetal loss, while a similar percentage has congenital syphilis as a result. Although easily preventable, this disease has a high prevalence, affecting 2 million pregnant women worldwide. According to the World Health Organization (WHO),it isfour times more prevalent than infection by the human immunodeficiency virus (HIV).[3]

CLINICAL MANIFESTATIONS

At birth, approximately two-thirds of live births with congenital syphilis are asymptomatic, while in the others, clinical features vary according to the disease classification.[7] Early congenital syphilis presents asmucocutaneous lesions such as mucous patches, palmar-plantar lesions, radial periorificial fissures, anogenital flatcondylomas and hepatosplenomegaly as its main signs, occurring in about 70% of cases. Meanwhile, bone lesions, manifestingas periostitis and osteochondritis (e.g.pseudoparalysis of Parrot); central nervous system lesions (e.g.,seizures, meningitis); respiratory disorders (pneumonia alba) and bloody rhinitis appear in a minority of cases.[8] Moreover, according to Saraceni et al. (2005), prematurity and low birth weight are also signs that may appear in congenital syphilis, being directly related to fetal death.[6] Therefore, late congenital syphilis has the following characteristics: Olympian brow, curved mandible, high palatal arch, Hutchinson’striad (interstitial keratitis, Hutchinson’s teeth, and eighth nerve deafness), saddle nose; saber shin, deafness, mental retardation and hydrocephalus.[8]

DIAGNOSIS

Aimed at the screening and treatment of congenital syphilis, Brazil implemented the Operational Plan for HIV and Syphilis Vertical Transmission Reduction, published in 2007, which emphasizes actions in primary care, stimulatingscreening forsyphilis in pregnant women through the VDRL (Venereal Disease Research Laboratory) test in the 1st and 3rd trimesters.[2,3] However, studies that raised primary data on testcoverage showed that 66% to 95% of pregnant women had access to at least one VDRL during prenatal care, but the 2nd VDRL, which should be performed until the 30th week of pregnancy,is generally performed in less than 25% of the pregnant women (0.2% to 20.7%).[3] Based on a VDRL with a result <1:8, additional investigation for congenital syphilis is indicated. Thus, there is availability of the method of direct identificationof *T. pallidum* by dark field microscopy of the placenta or umbilical cord, while the FTA-Abs treponemal test (fluorescent antibodytechnique) should not be performed in newborns,as the test can yield false negative results.[8] Additionally, for complementary assessment, it is important to request a lumbar puncture (in the presence of neurosyphilis signs), long boneradiography, blood cell count and anti-HIV test.[3,8]

For case definition purposes, early congenital syphilis is considered up to 2 years of age; after that, it is considered late congenital syphilis. It is considered a case if the following conditions are met: all newborns of untreated or inadequately treated mothers; every child with a positive VDRL and analterationthat may be clinical, radiological or in the CSF; VDRL titer 4–fold higher thanor equal to the maternal one in childbirth; increase in VDRLtiter; newborn with laboratory evidence in material obtained from lesion, placenta or umbilical cord; fetal death after 20 weeks or weighing more than 500 grams, whose syphilitic mother was inadequately treated or not treated; stillbirth with syphilis.[9]

TREATMENT

The treatment of congenital syphilis depends on four factors: identification of syphilis in the mother, treatment adequacy, presence of clinical, laboratory and radiological evidence in the neonate and comparison of maternal and the newborn'snon-treponemal serology.[10]

Treatment with crystalline penicillin G at a dose of 50,000 IU / kg, intravenously every 12 hours for the first 7 days of life and every 8 hours up to 10 days of life or penicillin G procaine 50,000 IU/kg in asingle daily dose, intramuscularly for 10 days is

indicated in the following conditions: symptomatic newborn with clinical, serological, radiological and / or hematologic alteration, whose mother with syphilis was adequately treated or whose mother with syphilis was not was treated or inadequately treated (treatment performed with penicillin 30 days before delivery, or without penicillin); and newborn whosemother wastreated,witha VDRL titer higher than the maternal one, or less than or equal to the mother's titer without the possibility ofclinical follow-up, both cases showingtestalterations. Inthe presence of CSF alterations, all casesshould receive crystalline penicillin G.[7]

Treatment with penicillin G benzathine, 50,000 IU/kg, single dose, intramuscular, is indicated in the following situations: asymptomatic newborns of inadequately treated mothers, or mothers treated with no possibility of clinical follow-up, both cases with negative tests and VDRL titer; and in infants of treated mothers, which have VDRL titer ≤ the maternal one, with other negative tests.[7]

Treatment with crystalline penicillin G, every 4 hours, is carried out in children older thanone month, with clinical and serological picture compatible with congenital syphilis. In caseof treatment interruption, even for one day, it must be restarted.[7]

The injection, and also the resulting rash (allergic marker) may be related to the fact that penicillin treatment is not being carried out in many parts of Brazil, and the justification is attributed to penicillin adverse reactions, mainly anaphylactic ones. This situation is intensified with the adoption of unrealistic practices in some places, which makes people seek alternative spaces for penicillin application, such as pharmacies.[1] Additionally, adverse events are constantly interpreted as anaphylactic reactions, as anxiety, as sweating and as fear of the treated disease,or with other concomitant disease to syphilis. Moreover, the frequency of anaphylactic reactions is around 0.04% to 0.2%, with a lethality rate of 0.001%.[1]

The management of anaphylactic reactions is aimed to their manifestations: skin reactions, breathing difficulties and hypotension. Epinephrineat a dose of 1: 1000 0.3 to 0.5 mLshould be administered in adults and 0.01 to 0.3 mL, as a maximum dose,in children, intramuscularly. Antihistamines, H1 and H2 antagonists have an adjuvant role in anaphylaxis management. To treat hypotension, the patient should lie down and elevate the legs. Oxygen (100%, 4 to 6 L/ min)should be administered by mask to treat respiratory difficulty and for asthma, 0.9% sodium chloride and fenoterol should be administered.

It should be recalled that penicillin can be substituted by other antibiotics; however, it results in inadequate treatment and consequent congenital syphilis.[1]

CONCLUSION

This review article aimed to emphasize the importance of syphilis as one of the most prevalent vertically-transmitted diseases, as well as its variable presentation and, consequently, treatment. Its prevalence, both locally and globally, remains high despite the preventive measures that havebeenimplemented. One cannot ignore the aspect related to the association of syphilis with HIV infection, of which incidence also remains high, and the concomitant treatment of sexual partners, which is often not carried out properly,thus perpetuating the chain of transmission. Penicillin is still the drug of choice for the treatment, which guarantees the cure.

Although the diagnosis and treatment are low-cost and readily accessible, congenital syphilis remains a public health problem and further studiesshould be carried outaiming to generate new prevention strategies.

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